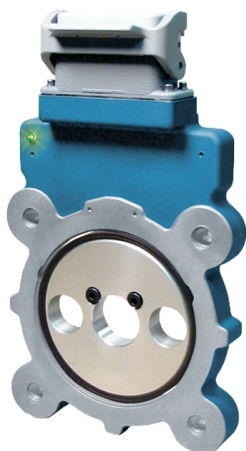


## Avtron XR56A SMARTSafe™ Encoders



**Hazardous Duty Magnetic Encoder,  
Heavy Duty 4.5" Modular**

### Magnetic Durability in a Compact Encoder

Fits NEMA 4.5" Flanges for Marathon Blue & Black Max, Reliance & Reuland Motors

ATEX/IECEX Rated for Zone 1, 2, 21 & 22 Applications

Ideal for Oil and Gas Drilling

No Bearings to Wear Out

Up to 5000 PPR

Wide Sensor-Rotor Gap: No Shimming or Scraping

Protected Against Wiring Errors

Self-Diagnostic LED and Alarm Output

3 Year No-Hassle Warranty

cULus Class I Division 1 Groups A,B,C,D Listed

cULus Class I Zone 0 Group IIC

cULus Class I Division 2 Groups A,B,C,D Listed

Fully Potted Electronics

### XR56A

XR56A SMARTSafe 4.5" modular incremental quadrature rotary encoders are a breakthrough in hazardous duty encoders. They are ATEX and UL approved and offer incredibly reliable no-bearing construction! SMARTSafe encoders can be used in gas and ATEX dust hazardous environments. Also available: hollow shaft models (XR45, XR685), shafted models (XR4F, XR485), and no-bearing modular encoders to fit other flange sizes (XR85A, XR115, XR125, XR850).

For applications requiring ATEX/IECEX Zone 2 or 22 or UL Class I, Division 2, (gas) Groups A,B,C,D use the XR56A directly in your application with no barrier, isolator or cable gland required.

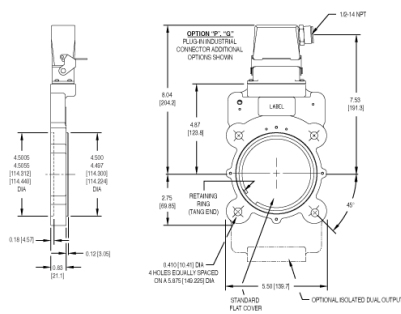
For applications requiring UL Division 1, ATEX/IECEX Zone 1 or 21 protection use the XRB3 isolator in your control cabinet which permits the use of intrinsically safe wiring instead of explosion-proof conduit or glands. The XR56A can also be used in UL Class I Div 1 & Zone 0 applications using the XRB3 Isolator.

Unlike the competition, Avtron SMARTSafe encoder systems are protected against short circuits, power-to-output wiring, and output-to-ground faults.

Instead of relying on a tiny optical encoder with weak bearings, install the most rugged encoders available for your drilling or industrial applications. Vibration, shock, liquids, dust and dirt won't harm SMARTSafe encoders! Paint booths, draw works, coil tubing rigs...XR56A can keep them all working 24/7/365.

Eliminate the biggest cause of industrial encoder failure--eliminate the bearings with XR56A hazardous duty encoders!

## OUTLINE DRAWING



## MORE XR56A ADVANTAGES

- Replaces BEI H38 and Dynapar X25 explosion-proof encoders
- Thin profile reduces overall motor depth
- No air gap adjustment required
- Fits shafts 0.500" - 3.188" [10 - 85 mm]
- 4,500,000+ hour MTBF design
- Eliminates large & costly flange adapters & flowerpots
- Shrugs off dirt, oil, and water contamination
- No glass disks to break or optics to fail

## MORE XR56A SPECIFICATIONS

**Operating Power:** (add load and cable drive current as req'd)

Division 1, Zone 1 (XRB3): 12-24VDC In/Out, 150 mA

Division 2, Zone 2: 5-24VDC In/Out, 150mA

**Output Format:** A Quad B with marker (A, A, B, B, Z, Z)

**Frequency Range:** 0 to 165 kHz

**Maximum Cable Length:**

Division 1, Zone 1: Encoder 500' Isolator 1000'

Division 2, Zone 2 (5 to 12 VDC in): 500'

Division 2, Zone 2 (15 to 24 VDC in): 250'

**Temperature:** -40°C to 80°C (storage -40°C to 100°C)

**Environmental:** IP54 (see manual for details)

**Vibration:** 5-2000Hz, 20G, 100G Shock

**Weight:** 2-3lbs [.9-1.4kg]

**Certifications:**

ATEX/IECEX Zone 1 & 21 Group IIC

cULus Class I Div 1 and Zone 0 Group A,B,C,D\*

ATEX/IECEX Zone 2 & 22 Group IIC

cULus Class I Div. 2 Groups A,B,C,D

\*See installation drawings for Warnings and Limitations.

Check out our website for more detailed specifications, drawings, and installation instructions. [www.avtronencoders.com](http://www.avtronencoders.com)

# SELECTION GUIDE

MODEL	HOUSING TYPE	ROTOR BORE SIZE	COVER STYLE	LINE DRIVER	LEFT OUTPUT PPR	RIGHT OUTPUT PPR	CONNECTOR OPTIONS	MODIFICATIONS
XR56A	1 - Single Output 2 - Dual, Isolated Outputs	CA - 1/2" Thru-Shaft Rotor CB - 5/8" Thru-Shaft Rotor (Universal) CC - 7/8" Thru-Shaft Rotor CD - 15/16" Thru-Shaft Rotor CE - 1" Thru-Shaft Rotor CF - 1 1/8" Thru-Shaft Rotor CG - 1 1/4" Thru-Shaft Rotor CH - 1 3/8" Thru-Shaft Rotor CT - 1 1/2" Thru-Shaft Rotor CJ - 1 5/8" Thru-Shaft Rotor CK - 1 3/4" Thru-Shaft Rotor CL - 1 7/8" Thru-Shaft Rotor CM - 2" Thru-Shaft Rotor CN - 2 1/8" Thru-Shaft Rotor CQ - 2 1/4" Thru-Shaft Rotor CP - 2 3/8" Thru-Shaft Rotor CR - 2 1/2" Thru-Shaft Rotor TS - 2 5/8" Thru-Shaft Rotor TW - 2 3/4" Thru-Shaft Rotor TU - 2 7/8" Thru-Shaft Rotor TV - 3" Thru-Shaft Rotor T4 - 3 1/8" Thru-Shaft Rotor TZ - 3 1/4" Thru-Shaft Rotor T7 - 3 3/16" Thru-Shaft Rotor D2 - 10mm Thru-Shaft Rotor DA - 11mm Thru-Shaft Rotor D3 - 12mm Thru-Shaft Rotor DB - 14mm Thru-Shaft Rotor DC - 15mm Thru-Shaft Rotor DD - 16mm Thru-Shaft Rotor D4 - 18mm Thru-Shaft Rotor DE - 19mm Thru-Shaft Rotor DF - 24mm Thru-Shaft Rotor DS - 25mm Thru-Shaft Rotor DG - 28mm Thru-Shaft Rotor DH - 30mm Thru-Shaft Rotor DT - 32mm Thru-Shaft Rotor DJ - 36mm Thru-Shaft Rotor DK - 38mm Thru-Shaft Rotor DL - 42mm Thru-Shaft Rotor DM - 45mm Thru-Shaft Rotor DN - 48mm Thru-Shaft Rotor DP - 52mm Thru-Shaft Rotor DR - 55mm Thru-Shaft Rotor DS - 60mm Thru-Shaft Rotor MS - Obsolete, use DS for 60mm Thru-Shaft Rotor, Cam Screw Mount MU - 65mm Thru-Shaft Rotor MV - 70mm Thru-Shaft Rotor MW - 75mm Thru-Shaft Rotor MY - 80mm Thru-Shaft Rotor MZ - 85mm Thru-Shaft Rotor	E - Extended (Pie-Pan Style) Cover F - Flat Outboard Cover, Low-Profile T - Outboard Seal Plate for Thru-Shaft X - No Cover Plate	7 - Level 2 Protection, (ATEX/IECEx Zone 2 & 22) 5-24V, 5-24V out F - Level 1 Protection, (UL Class I, Div 1, UL/cUL Class I, Zone 0 Listed) 5-7V, 5V out (NOTE Requires XRB3 Isolator) G - Level 2 Protection, (UL Class I, Div 2 Listed) 5-24V, 5-24V out H - Level 1 Protection (ATEX/IECEx Zone 1 & 21), 5-7V in, 5V out (NOTE Requires XRB3 Isolator) R - US CLASS I, DIV 2, ZONE 2, RECOGNIZED, 5-24V in, 5-24V out	F - 60 PPR G - 100 PPR H - 120 PPR A - 128 PPR L - 240 PPR N - 256 PPR P - 300 PPR E - 360 PPR B - 480 PPR Q - 500 PPR R - 512 PPR S - 600 PPR V - 900 PPR J - 960 PPR Y - 1024 PPR Z - 1200 PPR 4 - 2048 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR	X - No Right Output, Single Output Only F - 60 PPR G - 100 PPR H - 120 PPR A - 128 PPR L - 240 PPR N - 256 PPR P - 300 PPR E - 360 PPR B - 480 PPR Q - 500 PPR R - 512 PPR S - 600 PPR V - 900 PPR J - 960 PPR Y - 1024 PPR Z - 1200 PPR 4 - 2048 PPR 5 - 2500 PPR D - 4096 PPR 8 - 4800 PPR 9 - 5000 PPR 0 - Special PPR	A - 10 pin MS style w/o Plug, Avtron/BEI HS35 Pinout B - 10 pin MS style w/o Plug, Dynapar HS35 Pinout C - 10 pin MS style w/ Plug, Avtron/BEI HS35 Pinout D - 10 pin MS style w/ Plug, Danaher HS35 Pinout P - Industrial (EPIC Style) w/mating plug & remote alarm contact G - Ind1 w/Northstar Pinout (EPIC Style connector), w/mating plug, LED diagnostics W - 36 inch Cable w/LED diagnostics + alarm output contact J - 7 pin MS style w/o Plug, Avtron/BEI HS35 Pinout, A,B,Z channels, LED Diagnostics K - 7 pin MS style w/o Plug, Avtron/BEI HS35 Pinout, A,A',B, B/ channels, LED Diagnostics U - 7 pin MS style w/o Plug, (reverse phasing Dynapar Pinout), A,B,Z channels, LED Diagnostics V - 7 pin MS style w/o Plug, (reverse phasing Dynapar Pinout), A,A',B, B/ channels, LED Diagnostics R - 10 pin Mini-MS style (Bayonet) w/LED diagnostics H - Terminal box w/ USA 1/2" conduit entry (UL/ATEX/IECEx) M - Terminal box w/ USA 3/4" conduit entry (cUL/UL/ATEX/IECEx) N - Terminal box w/ USA 1" conduit entry (cUL/UL/ATEX/IECEx) 8 - Terminal box w/ 25mm conduit entry (cUL/UL/ATEX/IECEx)	000 - None 005 - Super Magnetic Shielding Added 017 - Add counterbores to mounting holes for thinnest profile 018 - Include XRB3 Remote Level 1 Isolator for Remote Cabinet Mount 401 - 1270 (Special) Left Output PPR, No Right Output (Set PPR Codes = 0) 402 - 150 (Special) Left Output PPR, No Right Output (Set PPR Codes = 0) 403 - 50 (Special) Left Output PPR, No Right Output (Set PPR Codes = 0) 404 - 100 (Special) Left Output PPR, No Right Output (Set PPR Codes = 0) 405 - 16 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 406 - 6000 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 407 - 2800 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 408 - 1400 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 409 - 30 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 415 - 3000 (Special) Left PPR, No Right Output (Set PPR Codes = 0) 901 - 0.3m/1' Special Cable Length 902 - 0.6m/2' Special Cable Length 903 - 0.9m/3' Special Cable Length 905 - 1.5m/5' Special Cable Length 910 - 3m/10' Special Cable Length 915 - 4.5m/15' Special Cable Length 920 - 6m/20' Special Cable Length 930 - 9m/30' Special Cable Length 933 - 10m/33' Special Cable Length



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